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ABSTRACT

This package of three modules on safety is one of six such packages containing a total of 46 modules that comprise Health Occupations Education II, the second course of a two-year course of study. Each module may contain some or all of the following components: introduction, directions, objectives, a list of learning activities, student information sheets, student assignment sheets, student self-checklists, a description of check-out activities, an evaluator's final checklist to assess student performance, and a student self-check key. Module titles are (1) Safety and Fire Prevention; (2) Body Mechanics for the Health Care Worker: Body Alignment, Balance, and Movement; and (3) Safe and Effective Body Movement. (YLB)

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Module No. III

SAFETY

HEALTH OCCUPATIONS EDUCATION II

South Carolina Department of Education, Charlie G. Williams, State Superintendent

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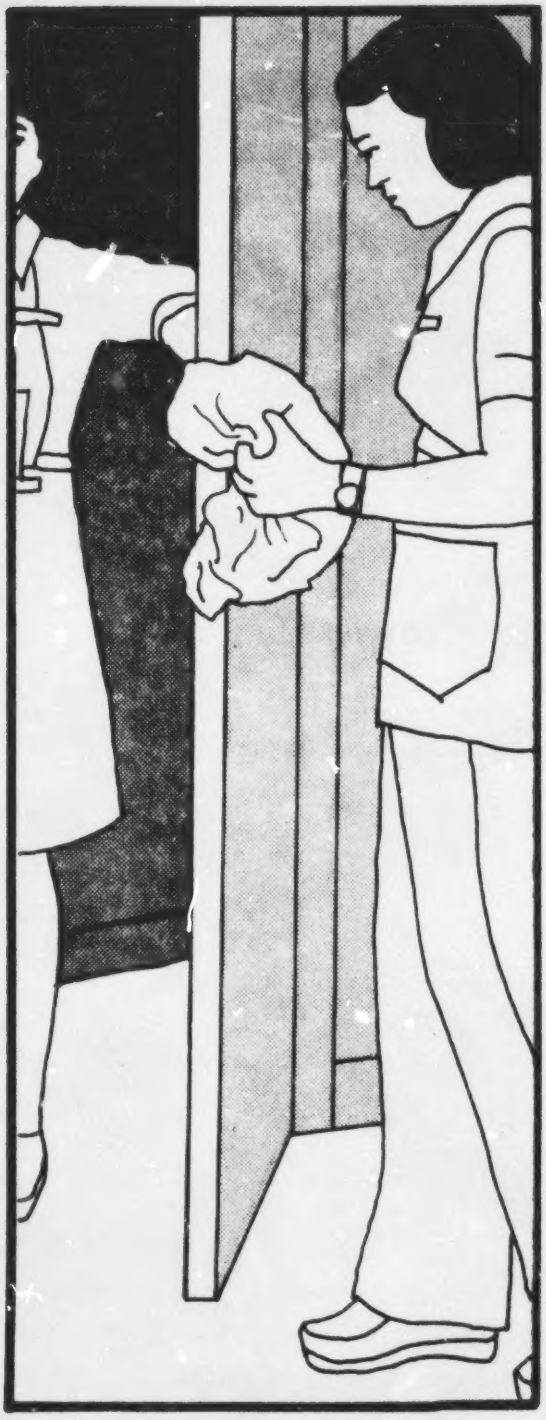
Module No. III-A

SAFETY AND FIRE PREVENTION

SAFETY AND FIRE PREVENTION



INTRODUCTION

Safety is your responsibility, whether in the classroom or in the health care setting. Patients are handicapped by illness, disabilities, worries and medications; therefore, one major job of each health care worker is to safeguard patients, visitors, and other health care facilities. You must be especially careful to guard against accidents and to prevent fires and other kinds of emergencies. In this module you, as a health assistant, will learn how to prevent accidents or injuries and what to do in case an emergency arises.

DIRECTIONS

Read the Objective. If you think you are able to perform this task, read the Check-Out Activities. Then either arrange with your evaluator to do the Check-Out Activities,

or

If you need to complete learning activities in order to be able to perform this task, locate the section on Learning Activities and go through them in the order in which they are listed.

OBJECTIVE

Given specific information and instructional exercises on safety and fire prevention, you will be able (1) to identify causes of accidents or fires in the health care environment; (2) to describe measures that can be taken to prevent accidents or fires; and (3) to cite measures to follow in case of an accident or fire. Mastery will be determined by scoring a minimum of ____% on a teacher-prepared written examination.

LEARNING ACTIVITIES

1. READ
   a) *Nursing Skills for Allied Health Services,* "Provisions of a Safe Environment," pages 24-36
   b) *Health Assistant,* "Environmental Control and Safety Measures," pages 38-48,

   and/or _____.

2. WRITE a short definition for the terms on Student Assignment Sheet No. 1.

3. VIEW Trainex filmstrips
   a) "How's Your Safety Profile"
   b) "How to Work All Day Without Getting Hurt"
   c) "Patient Safety, Thermometers to Wheel Chairs"
   d) "Safety in a Medical Facility,"

   and/or _____.

4. STUDY Student Information Sheets Nos. 1, 2, and 3.

5. DISCUSS any questions you have with your instructor.

6. COMPLETE Student Self-Check. Record your answers on a separate sheet of paper.

7. ARRANGE with your instructor to complete this module by going through the Check-Out Activities.

STUDENT INFORMATION SHEET NO. 1 – EXPLORING HEALTH CAREERS

I. **Terms and Definitions**

A. *Career* – Progress of individual in work; may include variety of jobs, occupations, and professions

B. *Job* – Group of similar positions in a work situation

C. *Work* – Any kind of planned or responsible activity in which an individual engages with expectation of a return for efforts

D. *Occupation* – Group of similar jobs

E. *Self-awareness* – Ability to recognize one's own values, ambitions, and goals

F. *Personality* – Sum of a person's distinctive individual qualities

G. *Cardiologist* – Physician who specializes in treatment of heart disorders

H. *Dermatologist* – Physician who specializes in treatment of skin diseases

I. *Gynecologist* – Physician who specializes in treatment of female reproductive system diseases

J. *Neurologist* – Physician who specializes in treatment of diseases of the nervous system

K. *Proctologist* – Physician who specializes in treatment of disorders of the rectum, colon, and anus

L. *Obstetrician* – Physician who specializes in treatment of women during pregnancy and childbirth

M. *Pediatrician* – Physician who specializes in treatment of children's diseases

N. *Psychiatrist* – Physician who studies, treats, and prevents mental illness

O. *Orthopedist* – Physician who specializes in treatment of disorders and diseases of the muscles, tendons, and bones

P. *Urologist* – Physician who specializes in treatment of diseases of the urinary tract

Q. *Nurse clinician* – Registered nurse with general knowledge of nursing theory and practice who is particularly skilled in a clinical specialty

Nurse practitioner is a similar job title. They can work independently in solving patient care problems.

R. *Podiatrist* – Physician who specializes in treatment of disorders of the feet

S. *Health Professional* – Individual whose skill is based upon extensive education, knowledge, and training unique to a specific field

T. *Therapist* – One who specializes in carrying out treatments aimed at correcting or improving the function of a body part or system

STUDENT INFORMATION SHEET NO.1 – EMPLOYEE SAFETY

Studies of accidents in health care facilities indicate that falls and improper lifting of heavy objects (including patients) cause almost two-thirds of the more serious disabling injuries. The remaining one-third involves a great number of other causes including electricity, moving machinery, and the incorrect use and handling of tools and equipment.

The health care workers' awareness of the major causes of accidents is the very first step toward the elimination of accidents. Because safety is everybody's business, all health care personnel should follow these twelve fundamental rules of safety.

1. The safe way is the right way to do each task: urgency is no cause to neglect safety.

2. Report any unsafe condition or act that you observe. Report any foreign material that you see on floors, or remove it at once to prevent injury to others. Wipe up spilled liquids.

3. Report defective or damaged equipment immediately.

4. Walk, do not run, especially in halls and on stairs. Keep to the right, using special caution at intersecting corridors.

5. Know the hospital's fire safety plan. Know the locations of fire alarms and extinguishers and how to use them.

6. Know and use safe work procedures and practices. Seek assistance when needed; use good body mechanics.

7. If swinging doors have glass inserts, be certain that the other side is clear before opening. If not, open the door slowly, using the handle or push plate.

8. Report all injuries, however slight, to the supervisor. Get immediate first aid.

9. Realize that horseplay and practical jokes often result in serious injury. The hospital is no place for them.

10. When in doubt about what should be done, ask the immediate supervisor. Observe all posted safety information.

11. Use scissors or other cutting instruments rather than razor blades. When you must use razor blades, secure the blade portions in a holder.

12. Before opening sterilizers, always shut off the steam and wait until excess steam has escaped. Use protective gloves or cool forceps to remove articles from sterilizers.

STUDENT INFORMATION SHEET NO. 2 - PATIENT SAFETY

In spite of great advances in medicine and its related technology in recent years, patients continue to be the victims of three major types of accidents: falls from beds or elsewhere in their rooms; electrical shock occurring while they are undergoing surgery, in special treatment areas or in their rooms; and explosions due especially to gases and used during anethesia. In the case of electrical shock and gas explosion, evidence indicates that the primary causes are the operator's unfamiliarity with newly developed devices and improper testing or grounding of the mechanisms before they are put into operation.

The many problems associated with the application of advanced technology must be recognized early and they must be combatted by all health team members. There is no simple solution to this aspect of the accident prevention problem. Education, engineering, and practice are all required in a never ending instructional program due to the constant turnover in hospital personnel and the constant development of new equipment.

The tremendous advances in medical science are not the only sources of injury to patients. There are still too many recurring incidents of burns from spilled hot liquids or from smoking in bed, reactions to improperly administered treatments, falls from beds, examining tables, and wheeled vehicles and slipping or stumbling over objects on the floor.

I. General Patient Safety Measures

A. Keep a patient's room clean and neat at all times.

B. Make sure that the desk, table, and cabinet drawers in a patient's room are closed immediately after use.

C. After using a crank handle to adjust a bed, fold the handle back under the bed.

D. Keep instruments and needles on the tray or cart, not on the patient's bed, on a chair, or in a pocket.

E. Always be on the alert for signs of abnormalities in patient behavior or actions: tendencies toward self-destruction or combative aggressiveness on the part of mental patients; falls of neuromuscular patients or of aged patients who may have cataracts or are subject to blackouts, tremors, or impaired coordination; coma or shock in diabetic patients; susceptibility to infections in leukemia patients; and anaphylactic reactions from allergenic patients. Also, be aware that patients who are aged or are on sleep-inducing drugs may doze off while smoking.

F. If a patient becomes overly aggressive or stubborn, use tact and diplomacy. Contact the patient's attending physician. Let a visitor's outburst be handled by the security staff. Find out whether patients witnessing such disturbances are upset by them.

II. Patient Falls

Falls are the predominant cause of injuries to patients, especially older ones. As for the public in general, more than 70 percent of the victims of fatal falls in health facilities are over 65 years of age.

About 65 percent of all patient injuries occur within 10 feet of the patient's bed. Among the causes are over-reaching; attempts by irrational, incapacitated, or postsurgical patients to get into or out of bed without assistance; and faulty bed rails or casters.

The problem is complex in that in that it involves the education of both the patient, who may not be able to understand instructions, and staff members. Many patient falls can be traced either to ignorance or to a sense of insecurity and disorientation. The patient who has no rapport with the attending nurse is more likely to try taking care of her/himself when she/he should not do so.

Following these guidelines should help prevent falls of patients, especially in their rooms.

A. Rails should be required for all beds and should be used for sedated, unconscious, disoriented, or undependable patients of all ages. The patient should be told the purpose of the bed rails, if he/she is capable of understanding. Rails should be installed whenever drainage tubes, intravenous solutions, or catheters are being used unless the physician directs otherwise. Gentle restraints may also be prescribed by the physician to keep the patient from trying to cast aside such chemicals and instruments or to lower the bed rails. Each decision must be made on an individual basis.

B. Bedside tables should be placed close enough to the patient to permit her/him to reach her/his watch, water pitcher, drinking cup, telephone, spectacles, toiletries, reading matter, bed pan, urinal, and other articles.

C. The call button and radio and television controls should be within easy reach of the patient; night-light cords and similar devices can be pinned to the patient's pillow, if necessary.

D. Beds should be lowered before the patient attempts to stand. If a footstool is used, it should have rubber feet. To spare the patient from having to bend over to locate it, the stool should be kept within the patient's reach, and not under the bed.

E. Bed cranks should be retracted after use, so they do not become a tripping hazard.

F. Electrically operated beds should not have excessively long cords. They create tripping hazards and are subject to pinching by the bed mechanism.

G. Electrical appliances used within the room such as fans, radios, TV sets, and therapeutic devices should be properly grounded. Their cords must not extend into pedestrian traffic areas.

H. Prevent falls during ambulation by providing assistance to patients who may be getting up for the first time following surgery, special treatments, or tests and those who may have been in bed for a long period of time or may be weak due to illness.

I. Prevent falls and injury during transportation by applying safety belts; instructing patient to keep arms and hands near his/her side; manipulating stretcher from end near patient's head; staying with patient; using locks on wheel chair and stretcher when it is not moving; and backing down steep ramps.

J. To prevent falls from chairs, select a chair to meet the needs of the patient. Apply the correct supports, restraints, or safety belts and check patient's position frequently to be sure restraints do not interfere with vital body functions.

III. **Safety for Children**

People who work with children must always be alert to situations that may cause accidents.

The following are some special measures to take in a pediatrics department or a children's hospital to make accidents less likely to happen.

A. Small children should never be left unattended when they are awake.

B. Every child in a protective device should be checked frequently.

C. Articles used in the child's care should be kept out of reach of a toddler when they are not being used. Watch especially for needles, water, safety pins, medications, matches, electrical equipment, syringes, or thermometers.

D. Toys should never be left carelessly on the floor. Be especially alert to pick them up as they could cause someone to fall. Also, remember to clean up spills and messes such as food, urine, and feces right away.

E. The sides of a child's crib should be up at all times except when someone is giving direct care to the child.

F. Doors to stairways, utility rooms, and the kitchen should always be closed immediately after use. They should be locked whenever possible.

G. Linen chutes should be kept locked except when they are being used by hospital personnel.

H. Venetian blind cords should be kept out of the reach of children.

IV. **Legal Implications**

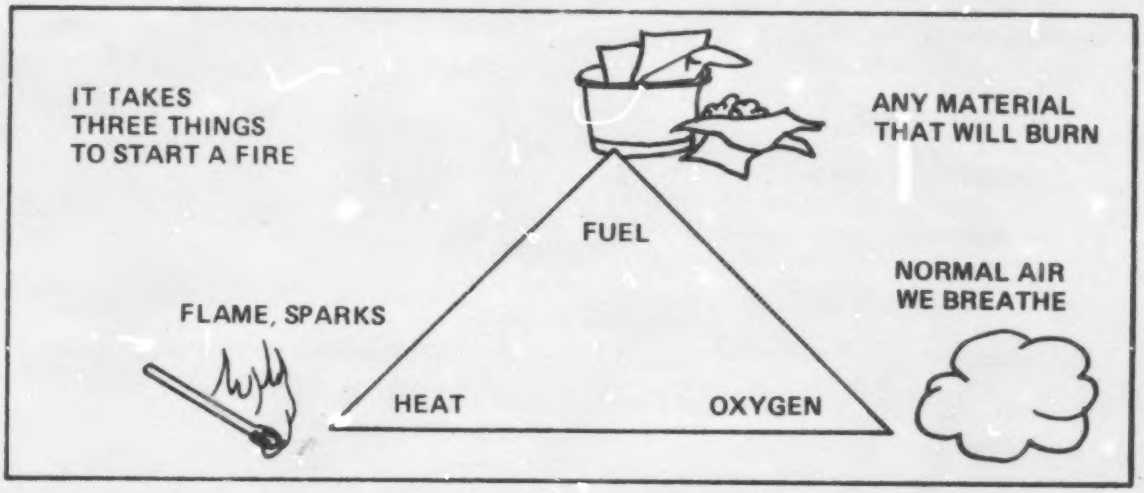
Safety is the responsibility of everyone, whether in the classroom or in the health care facility. You should do everything in your power to prevent the possibility of accidents. You do this for the sake of preserving life, preventing unavoidable pain or suffering, avoiding extended hospital stays and expenses and also to prevent lawsuits against you or your health care facility. A charge of negligence is usually due to carelessness, inattention, ignorance, or confusion. Avoid any legal actions by being safety conscious in all duties you undertake.

Report accidents to the appropriate person. Procedures to follow vary according to each facility. Learn what procedure to follow and *follow it.*

Safety will be a component of all other units in Health Occupations Education II that have any *hands on* skills involved.

STUDENT INFORMATION SHEET NO. 3 – BASIC GUIDE FOR FIRE SAFETY

Modern buildings and health care facilities are built to prevent fires. Unfortunately fires still occur. Fire safety means preventing fires and knowing what to do if a fire does occur. The procedure will vary depending on the type of facility, but these general guides will direct you. It is your responsibility as a health assistant to guard against fires and to learn what your role will be in case of fire.



I. Major Causes of Fire

A. Carelessness while smoking and using matches by patients, visitors and employees.
B. Defect in heating system.
C. Spontaneous combustion due to improper storage of materials.
D. Improper disposal of trash.
E. Improper use of electricity.

II. Potential Causes of Fire in Health Care Facility

A. Oxygen equipment carelessness while using anesthetic gases.
B. Flammable chemicals in laboratories.
C. Flammable or combustible liquids or fluids such as aerosols.
D. Patients smoking while sedated or confused.

III. Smoking

A. Smoke only where permitted. This is a strict rule; be firm and allow no exceptions. Violators must be stopped.
B. Have large ashtrays available for use.
C. Keep waste baskets away from smoking area.
D. Keep trash cans covered to guard against careless smokers.
E. Empty trash regularly. Never leave it to tempt a fire.

IV. **Flammable Liquids**

A. Read labels and heed warnings.
B. Beware of vapors (explosive); ventilate the area; avoid sparks, heat, and flame. Remember, no smoking!
C. Store and dispose per strict regulations. Never throw flammable liquids in regular trash.
D. Store flammable soiled clothes in covered metal containers.

V. **Electricity Safety**

A. Don't plug too many cords in one outlet. If overloaded the outlet overheats.
B. Before plugging heavy equipment in an outlet, be sure it is adequate to handle the load.
C. If a fuse blows or a circuit breaker trips, have the electrician check it.
D. Keep combustibles away from light bulbs and electrical appliances since their heat can cause a fire.
E. Check cords for frayed wires. Do not delay any electrical repairs.

VI. **Use Oxygen with Extreme Fire Safety**

A. Post no smoking signs on equipment and outside doors. Caution visitors and patients. Take away all of patient's smoking materials.
B. Remove electrical equipment such as radio, razor, heating pad, and call signal. If electricity is needed, use mask or nasal oxygen unit.
C. Beware of static electrictiy. Avoid the use of woolen blankets, synthetic or silk garments, plastic mattress covers and hair brushing.
D. Use nonflammable liquids for back rubs. Avoid using oil, lotion, or alcohol.
E. Wash any oil or grease off your hands before touching oxygen equipment or controls.

VII. **Lives Can Depend Upon What You Do . . . Quickly!**

Patient Area

A. Be calm – prevent panic! Never shout "Fire!"Know the "Fire Emergency Plan" and know your assignment. Your full cooperation is demanded. If you have any questions, ask your supervisor.
B. The fire alarm must not be delayed. Alert help to notify switchboard of exact location and fire conditon.
C. Rescue can be a matter of life-saving action. Keep patient calm by your actions – a smile helps. Close doors to other rooms.
D. If fire conditions warrant, turn off oxygen supply, ventilation or exhaust fans, and electricity. Authorized personnel may do this.
E. Try to put out fire. Life safety comes first.
F. Personnel should report to their area promptly if they are away from their unit. If preplanned otherwise, report to assigned area.

VIII. Fire Extinguishing

A. Small fires can be put out quickly.
Throw a pitcher of water on fire or smother it with a blanket, large pad, or almost anything quick at hand.
B. Smother a pan fire with the pan cover.

IX. Fire Fighting Equipment

A. Ordinary fire (Class A) – Use a water extinguisher; aim stream of water at base of fire, not at smoke.
B. Flammable liquids (Class B) – Do not use water; it can splash and spread burning liquids. Use a dry chemical extinguisher or a CO^2 extinguisher.
C. Electrical fires (Class C) – DO NOT USE WATER. Water risks shock; in this situation use dry chemical or CO_2 extinguisher.

X. Preplan Your Action: Be Prepared

A. Know the fire alarm location and know how to operate it.
B. Know the extinguisher location, what type and how to use it.
C. Check fire blanket, base, sprinkler, or other equipment. Be sure it is not blocked.
D. Check fire exit locations; never wedge open or block access.
E. Elevators are not to be counted on as fire escapes. Know alternate exit if the nearest exit is unavailable because of fire.
F. Check fire and smoke barrier doors to close off corridors.
G. Check corridors, ramps, and stairs to be sure they are kept clear for emergency access and evacuation.
H. Know the distance from the building you should be if you evacuate (usually 100 yards or 300 feet).
I. If you smell smoke, report it right away and check out the source.

STUDENT SELF-CHECK

Terminology

Match the terms in Column A with their correct definitions in Column B.

COLUMN A	COLUMN B
1. Safety	A. Fire caused by heat, fuel and rapid absorption of oxygen coming together without human effort
2. Accident	B. Federal legislation designed to protect the health and safety of employees
3. Hazard	C. Color used to designate location of fire fighting equipment
4. OSHA	D. Color used to designate caution
5. First aid	E. Freedom from danger, risk, or injury
6. Spontaneous combustion	F. To begin to burn; to start a fire
7. Flammable	G. A risk; a danger
8. Ignite	H. Capable of being easily ignited
9. Federal safety purple	I. Immediate and temporary care given the victim of an accident
10. Federal safety red	J. Unintentional event which causes injury or property damage
	K. Color used to designate radiation hazard

True or False

Write true or false for each statement.

1. Safety is a fundamental responsibility of all health personnel.
2. You should react automatically in an emergency and know what should be done.
3. When opening doors, open them quickly and suddenly so you can get out of the way of someone coming from the opposite direction.
4. You may walk on the right or left side in corridors as long as you stay to one side.
5. Most accidents to visitors are caused by slipping or tripping.
6. You should immediately report unsafe conditions that you notice to the proper person.
7. Elderly patients are more inclined to fall and therefore should be watched more closely.
8. If a fire starts while you are on a lunch break, you should not return to your unit but go to the location of the fire to help out.
9. As an employee, it is your responsibility to wear or use prescribed protective equipment while engaged in work.
10. Doors to stairways, utility rooms and kitchens should always be closed immediately.

Multiple Choice

Write the letter of the correct answer next to the number.

1. When you are not sure how to do something the same way:

   A. try different ways until you find the right way.
   B. ask someone with more experience and training than you do for advice.
   C. forget about it.
   D. look it up in a book.

2. When pushing a patient on a stretcher stand at the:

   A. head.
   B. foot.
   C. right side.
   D. left side.

3. What type of patients are most susceptible to burns and falls?

   A. children
   B. young
   C. elderly
   D. middle-aged

4. About 35 percent of all injuries are caused by:

   A. collisions with objects or other persons.
   B. defective equipment.
   C. burns.
   D. lifting and falls.

5. If a fire breaks out, the first thing you should do is:

   A. notify your supervisor.
   B. close all windows and doors.
   C. pull the fire alarm.
   D. put wet blankets under doors.

CHECK-OUT ACTIVITIES

The statements below explain the activity you must be able to complete in order to finish this module. After you complete the activity, your evaluator will rate your performance using the Evaluator's Final Checklist, SAFETY AND FIRE PREVENTION.

You will be given an examination on safety and fire prevention. You must score a minimum of ___% of the teacher -prepared written examination.

Student _____

Date _____

SAFETY AND FIRE PREVENTION

Evaluator's Final Checklist

Check the student's performance in the following elements of safety and fire prevention.

Place an X in the appropriate box indicating Not Accomplished, Partially Accomplished, or Fully Accomplished. If, because of special circumstances, the item was impossible to complete, place an X in the Not Applicable box.

Performance Level: All items must receive a rating of FULLY ACCOMPLISHED (or Not Applicable). If any items are rated Not Accomplished or Partially Accomplished, the student and evaluator will discuss this and decide which learning activities must be repeated.

Student Performance			
Not Applicable	Not Accomplished	Partially Accomplished	Fully Accomplished
[ ]	[ ]	[ ]	[ ]

Student scored _____% on the teacher-prepared written examination.

STUDENT SELF-CHECK KEY

Terminology

1. E
2. J
3. G
4. B
5. I
6. A
7. H
8. F
9. K
10. C

True or False

1. True
2. True
3. False
4. False
5. True
6. True
7. True
8. False
9. True
10. False

Multiple Choice

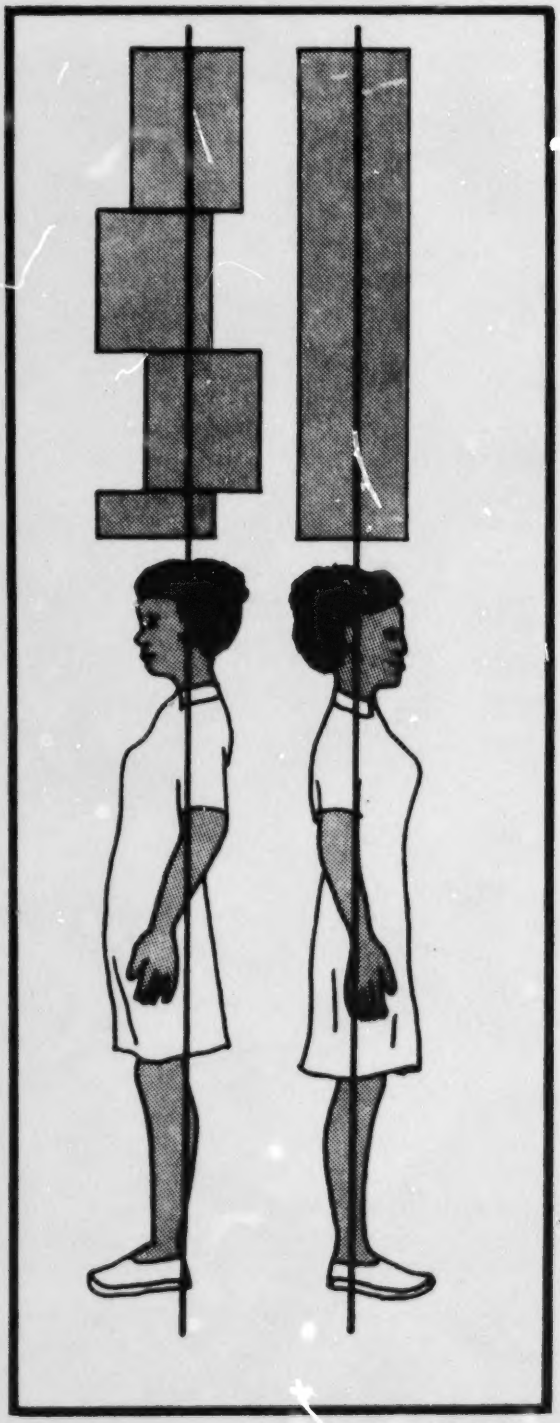
1. B
2. A
3. C
4. D
5. C

Module No. III-B

BODY MECHANICS

FOR THE HEALTH CARE WORKER

BODY MECHANICS FOR THE HEALTH CARE WORKER: BODY ALIGNMENT, BALANCE, AND MOVEMENT



INTRODUCTION

Health care assistants are very active people. One of the more common injuries to health care workers is muscle strain, a painful, costly and slow-healing injury. The knowledge and practice of proper body alignment, balance and movement will help you to prevent injury to yourself. This module will provide information about terminology and principles of good body alignment, balance, and movement and will describe alignment and movement for you to practice to safeguard your body. This information will also be useful for later modules on patient alignment, balance, and movement.

DIRECTIONS

Read the Objective. If you think you are able to perform this task, read the Check-Out Activities. Then either arrange with your evaluator to do the Check-Out Activities,

or

If you need to complete learning activities in order to be able to perform this task, locate the section on Learning Activities and go through them in the order in which they are listed.

OBJECTIVE

Given specific information and instructional exercises on proper body mechanics for the health care worker, you will be able (1) to position your body in proper alignment while in a standing position and verbally describe the seven guidelines; and (2) to describe while walking the movements of flexion, extension, hyperextension, abduction, and adduction and identify the major muscles involved. Mastery will be determined by scoring a minimum of __% on a teacher-prepared written examination.

LEARNING ACTIVITIES

1. READ and STUDY *Nursing Skills for Allied Health Services,* "Body Alignment, Balance, and Movement," pages 50-82 and/or Student Information Sheet No. 1.

2. WRITE and LEARN a short definition for the terms listed on Student Assignment Sheet No. 1.

3. COMPLETE Student Self-Check: Terminology. Record your answers on a separate sheet of paper.

4. VIEW Trainex filmstrip, "Body Mechanics,"

   and/or_____.

5. ATTEND a demonstration and discussion by your instructor of the seven guidelines to follow for good body alignment, the key points of each guideline, and movements and identification or major muscles involved in movements.

6. PRACTICE positioning your body in good alignment while standing and VERBALIZE to yourself or to a partner the guidelines for key points you use for each step.

7. PRACTICE good posture while walking and DEMONSTRATE the movements of flexion, extension, hyperextension, adduction and abduction. IDENTIFY the major muscles involved in producing the movement.

8. PRACTICE using your neck joint in the movements of flexion, hyperextension, adduction, and abduction of the head.

9. COMPLETE Student Self-Check: Body Alignment, Balance, and Movement. Record you anwers on a separate sheet of paper.

10. ARRANGE with your evaluator to complete this module by going through the Check-Out Activities.

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STUDENT INFORMATION SHEET NO. 1 – BODY ALIGNMENT AND BALANCE

I. Reasons For Good Body Alignment, Balance, and Movement

A. Prevent injury to your body
B. Prevent injury to patient
C. Make your work easier and prevent fatigue
D. Present a more attractive appearance
E. Set an example for others

II. Seven Guidelines for Good Body Alignment

A. Maintain a stable base of support.
   1. Feet parallel and about six to eight inches apart – may be wider apart if this is more comfortable or necessary to provide a good base of support
   2. One foot slightly ahead of the other – this provides anterior-posterior stability
B. Distribute weight evenly on both feet.
C. Slightly flex knees to prevent jolting movements of whole body and to prevent strain caused by "locking" of knees.
D. Tilt pelvis forward by tucking in buttocks and keeping spine straight. This allows for even distribution of pressure of the intervertebral disc.
E. Pull up and hold in abdominal muscles. This will decrease muscle strain on back and support organs in the abdominal cavity.
F. Keep rib cage raised and shoulders relaxed. This allows for expansion of lungs.
G. Hold head erect and balanced to avoid curvature of neck and thorax.

III. Body Movements

Movement takes place when muscles contract and pull on bones.

A. Flexion – to decrease the angle at a joint
   1. Knee joint – flexes lower leg
   2. Hip – flexes hip and upper leg
   3. Elbow – flexes lower arm
   4. Neck – flexes head

B. Extension – to straighten or increase the angle at the joint and extend arm or leg

C. Hyperextension – to increase the angle more than 180° or beyond a straight line
   1. Neck – raise chin and tilt head backward
   2. Knee – force knee joint straighter until knee is locked

D. Abduction – to move away from midline of body
   1. Head – flex neck and head to right or left side
   2. Arms – move away from body to 90° angle
   3. Legs – move away from body

E. Adduction – to move toward midline of body
   1. Head – will be held level and in midline of body
   2. Arms – move toward midline of body in straight line with trunk
   3. Legs – move in straight line with trunk

STUDENT ASSIGNMENT SHEET NO. 1 – BODY MECHANICS

Write a short definition of the terms or phrases. You may use *Nursing Skills for Allied Health Services* or *Taber's Cyclopedic Medical Dictionary*.

1. Abdomen
2. Abduct
3. Adduct
4. Antagonist
5. Anterior
6. Balance
7. Base of support
8. Body mechanics
9. Body alignment
10. Buttocks
11. Body systems
    - Circulatory
    - Digestive
    - Endocrine
    - Muscular skeletal
    - Nervous
    - Respiratory
    - Urinary
12. Center of gravity
13. Cervical
14. Corset muscles
15. Extension
16. Extremities
17. Flexion
18. Gravity
19. Glucose
20. Gluteal muscles
21. Hamstring muscle
22. Hormones
23. Hyperextension
24. Intervertebral disc
25. Lateral
26. Lumbar
27. Ligaments
28. Oxygen
29. Pelvis
30. Posterior
31. Posture
32. Pronation
33. Quadriceps femoris
34. Rotate
35. Stability
36. Thorax
37. Trunk (torso)
38. Vertebral column
39. Joint
40. Tendon
41. Line of gravity

STUDENT SELF-CHECK

Terminology

Match the terms in Column A with their definitions in Column B. Check your answers against the key.

COLUMN A	COLUMN B
1. Intevergebral disc	A. Coordination of body alignment, balance and movement
2. Center of gravity	B. Back surface
3. Posture	C. Imaginary vertical line which passes through the center of gravity
4. Ligaments	D. Relationship of body segments to each other
5. Base of support	E. Point or area in object at which its weight or mass is centered
6. Anterior	F. Spinal bones
7. Posterior	G. Arms and leg
8. Body mechanics	H. Binds bones together
9. Lateral	I. Contact of an object with the ground or surface
10. Midline	J. Body without extremities
11. Extremities	K. Imaginery line dividing body into equal halves
12. Tendons	L. Cushions between spinal bones
13. Buttocks	M. Refers to side
14. Line of gravity	N. Attaches muscles to bones
15. Vertebral column	O. Formed by gluteal muscles
16. Torso	P. Refers to front surface
17. Cervical	Q. Refers to neck

STUDENT SELF-CHECK

Body Alignment, Balance, and Movement

1. List two reasons for using good body alignment, balance, and movement.

2. Low back strain in the health care worker is most often caused by:

   A. carelessness of other people.
   B. lifting object which is too heavy.
   C. using the back muscle to lift.
   D. body segments aligned with one another.

3. Balance is best achieved by:

   A. a low center of gravity, a narrow base of support, and the line of gravity passing through the base.
   B. a high center of gravity, a broad base, and the line of gravity passing outside the base.
   C. a high center of gravity, a narrow base, and the line of gravity passing through the base.
   D. a low center of gravity, a broad base, and the line of gravity passing through the base.

4. Movement of the body occurs:

   A. where muscles are attached to bones.
   B. at joints acted on by muscles.
   C. when bones are stimulated by nerves.
   D. at the immovable joints.

5. A person with *sagging* abdominal muscles often has a greater curve in his back or a *sway back*. The greater curve may cause:

   A. decreased strain on the back.
   B. uneven pressure on intevertebral disc.
   C. less fatigue when doing heavy work.
   D. increased shock-absorbers effect of the spine.

6. Muscles are frequently referred to by a name similar to the name of the movement produced by their action. Some of these muscles would be called:

   A. extensors, flexion, and hyperextension.
   B. flexion, extensor, and abductors.
   C. extensors, hyperextension, and flexion.
   D. flexors, adductors, and abductors.

CHECK OUT ACTIVITIES

The statements below explain the activities you must complete in order to finish this module. After you complete the activities, your evaluator will rate your performance using the Evaluator's Final Checklist, BODY ALIGNMENT, BALANCE, AND MOVEMENT.

You will be given an examination on body alignment, balance, and movement. You must score a minimum of ___% on the teacher-prepared written examination.

You will demonstrate your ability to perform the following tasks without reference to source material.

1. In a standing position, you will position your body in proper alignment and verbally describe the seven guidelines and/or key points you use as a guide.

2. In a standing position, use good body alignment and bend your left knee and take one step forward as you straighten your leg. Describe the movement of the legs. Place the palm of your left hand on the muscles that were most involved and name them.

3. In a standing position, use good body alignment and take one step of 12 inches or more to your left; then bring the other foot parallel to your left foot. Describe the movement of the left foot and leg and the action of the right foot and leg. Identify by name the major muscles producing the movement and the point of the location of the muscle.

4. Use your neck joint and perform these movements.

   a) Flexion of neck

   b) Hyperextension of neck

   c) Abduction of head

   d) Adduction of head

Student _____

Date _____

BODY MECHANICS FOR THE HEALTH CARE WORKER: BODY ALIGNMENT, BALANCE, AND MOVEMENT

Evaluator's Final Checklist

Check the student's performance in the following elements of body mechanics for the health care worker; body alignment, balance, and movement.

Place an X in the appropriate box indicating Not Accomplished, Partially Accomplished, or Fully Accomplished. If, because of special circumstances, the item was impossible to complete, place an X in the Not Applicable box.

Performance Level: All items must receive a rating of FULLY ACCOMPLISHED (or Not Applicable). If any items are rated Not Accomplished or Partially Accomplished, the student and evaluator will discuss this and decide which learning activities must be repeated.

	Student Performance			
	Not Applicable	Not Accomplished	Partially Accomplished	Fully Accomplished
Student scored ____ % on the teacher-prepared written examination.	[ ]	[ ]	[ ]	[ ]
1. The student demonstrated proper body alignment and described the seven guidelines and/or key points.				
a) Feet in stride position, parallel or one slightly in front of the other	[ ]	[ ]	[ ]	[ ]
b) Weight evenly distributed on both feet	[ ]	[ ]	[ ]	[ ]
c) Knees slightly flexed	[ ]	[ ]	[ ]	[ ]
d) Buttocks tucked in and pelvis titled forward, spine straight	[ ]	[ ]	[ ]	[ ]
e) Abdominal muscles pulled up, held in	[ ]	[ ]	[ ]	[ ]
f) Thorax raised, shoulders relaxed	[ ]	[ ]	[ ]	[ ]
f) Head erect and balanced	[ ]	[ ]	[ ]	[ ]
2. Student demonstrated good posture while walking, identified major muscles involved in producing movement and located muscle by pointing to it.				
a) Body in good alignment	[ ]	[ ]	[ ]	[ ]
b) Left knee flexed	[ ]	[ ]	[ ]	[ ]
c) Identified movement as flexion	[ ]	[ ]	[ ]	[ ]
d) Identified prime movers as hamstring muscles	[ ]	[ ]	[ ]	[ ]
e) Located muscles on posterior thigh	[ ]	[ ]	[ ]	[ ]
f) Extended left knee and stepped forward	[ ]	[ ]	[ ]	[ ]
g) Identified movement as extension	[ ]	[ ]	[ ]	[ ]
h) Identified prime movers as the quadriceps femoris	[ ]	[ ]	[ ]	[ ]
i) Located muscles on the anterior thigh	[ ]	[ ]	[ ]	[ ]
j) Shifted weight to left foot	[ ]	[ ]	[ ]	[ ]
k) Identified movement as extension of the hip	[ ]	[ ]	[ ]	[ ]
l) Identified prime movers as glutial	[ ]	[ ]	[ ]	[ ]
m) Located muscles in the buttocks	[ ]	[ ]	[ ]	[ ]

30

3. Student demonstrated good body alignment as he/she took step sideward.

a)	With left foot, stepped to left side 12 or more inches	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
b)	Identified movement as abductor	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
c)	Identified prime movers as abductor muscles	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
d)	Located abductors on outer lateral thigh	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
e)	Moved right foot 12 or more inches to the left, parallel to the left foot	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
f)	Identified movement as adduction	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
g)	Identified prime movers as adductor muscles	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
h)	Located adductors in medial aspect of thigh	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

4. Student demonstrated movements using neck joints.

a)	Flexed the neck	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
b)	Hyperextended the neck	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
c)	Abducted the head	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
d)	Adducted the head	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

STUDENT SELF-CHECK KEY

Terminology

1. L
2. E
3. D
4. H
5. I
6. P
7. B
8. A
9. M
10. K
11. G
12. N
13. O
14. C
15. F
16. J
17. Q

Body Alignment, Balance, and Movement

1. Any of the following:

   A. Improve appearance
   B. Saves energy by making work easier
   C. Prevents injury and muscle strain
   D. Preserves muscle tone and strength

2. C
3. D
4. B
5. B
6. D

Module No. III-C

SAFE AND EFFECTIVE BODY MOVEMENTS

SAFE AND EFFECTIVE BODY MOVEMENT

INTRODUCTION

Many of the tasks of health care workers require lifting and moving objects or patients. You need to be familiar with guidelines to assist you in working with the natural laws of gravity, friction, and leverage in order to aid you in working safely and effectively. Knowing the correct way to reach, stoop, pivot, lift and carry, and push and pull will allow you to reduce fatigue and strain in your daily activities whether at home, at school, at play or in a working environment. This module provides additional guidelines in safety.

DIRECTIONS

Before you start work on this module you should have completed the module entitled *Body Mechanics for the Health Care Worker: Body Alignment, Balance, and Movement.*

In order to complete this module you will need:

1. Slipper to put on a person's foot
2. Heavy object located on a surface 6 to 12 inches over your head
3. Box or an object weighing 10 to 15 lbs. on a surface 32 to 36 inches high
4. Utility cart or desk that can be moved
5. Step stool

Read the Objective. If you think you are able to perform this task, read the Check-Out Activities. Then either arrange with your evaluator to do the Check-Out Activities,

or

If you need to complete learning activities in order to be able to do this task, locate the section on Learning Activities and go through them in the order in which they are listed.

OBJECTIVE

Given selected instructional exercises on safe and effective body movement and the appropriate equipment, you will be able (1) to perform correctly activities which demonstrate a knowledge of the five guidelines that permit proper body alignment and efficient movement; and (2) to state the reason for each guideline without the use of reference material.

LEARNING ACTIVITIES

1. READ *Nursing Skills for Allied Health Services*, "Using Safe Body Movement," pages 83-98,

   and/or _____ .

2. STUDY Student Information Sheet No. 1.

3. COMPLETE Student Self-Check. Record your answers on a separate sheet of paper.

4. VIEW Trainex filmstrip, "Lifting and Moving," and/or a demonstration by instructor or designated person.

5. PRACTICE each of the movements of stooping, reaching, lifting and carrying, pivoting, and pushing and pulling according to the steps in the book or in Student Information Sheet No. 1. STATE the principle or key points of each.

6. ARRANGE with your evaluator to complete this module by going through the Check-Out Activities.

STUDENT INFORMATION SHEET NO. 1 – SAFE AND EFFECTIVE BODY MOVEMENT

To prevent injury to the body, you should use the natural laws of gravity, friction, and leverage when moving objects and giving care to patients. Use the muscles, ligaments, and joints that are designed for the safe movements.

I. **Suggested Guidelines**

A. Maintain good body alignment and balance and keep feet pointing in the direction you will move.

B. Perform work at a proper height to minimize muscle strain and fatigue and to apply leverage to your work.

1. A comfortable working height for most people is between waist level and about 6 inches below hip joint.
2. Working at a level that is too high may cause hyperextension of the lower back and a less stable position.
3. Change the level of the work surface or change your level by standing on a short stool to raise your height or sitting in a chair to lower your height.
4. Flex your knees and stoop so that the large muscles of the thigh are used rather than the weaker back muscles.

C. Keep the work close to the body to avoid stretching or reaching. Carry objects close to the body so the line of gravity falls within your base of support.

D. Use smooth, coordinated movements.

1. Avoid sudden, jerky movements as you are less likely to injure yourself or the patient.
2. Explain movements to patient and gain cooperation.
3. If working with a partner, determine which one will give the signal for effective teamwork.

E. Prepare muscles for action by tensing or setting muscles.

1. Take a deep breath and tense or tighten muscles.
2. Let breath out slowly as you move object.
3. Setting muscles distributes the workload over a larger number of muscles.
4. Setting or stabilizing muscles helps avoid sudden jerking and strain and protects muscles, joints and ligaments.

II. **Performing Body Movements**

Given an object, you will demonstrate the proper body alignment, balance, and movement when (1) stooping, (2) reaching for an object, (3) lifting and carrying a heavy object, (4) pushing or pulling an object, and (5) making a pivot. Use the following guidelines.

A. *Stooping*

To demonstrate good body alignment in stooping:

1. Assume a stable base of support.
2. Stand with feet 10 to 12 inches apart, one foot slightly advanced.
3. Lower your body to stooped position by flexing knee and hips. Keep back and trunk of body straight.

4. Use thigh and leg muscles to control action.
5. Shift weight to advanced foot and ball of rear foot.
6. Relieve tension on rear foot and maintain balance.
7. Raise your body to standing position. Keep your back straight and initiate the move by extending your hip and knee joints.
8. Work your extensor muscles to bring your body upright.
9. Use the gluteal and quadriape muscles to raise from the stooping position.

B. *Reaching*

To demonstrate good body alignment in reaching:

1. Start with a stable base of support.
2. Start movement with your body in good alignment and balance.
3. Check the distance to be reached in order to reach your object. If necessary, secure an artificial aid in order to raise yourself. Obtain foot stool for use if needed.
4. Describe the correct use of the foot stool.
5. Utilize the foot stool appropriately. The line of gravity should be centered on the foot stool with feet in a balanced position.
6. Reach up from a position directly in front of the object.
7. Lift the object from the shelf using good alignment procedures.
8. Lower the object with a smooth, coordinated movement.
9. Lower yourself from the ladder or foot stool using good principles of body alignment.
10. Place the object on a shelf of working height or stoop and lower it to the floor. Observe good principles of body alignment.
11. The rationale for using the foot stool or artificial aid for increasing height is to avoid hyperextension of the neck and to assist in maintaining balance.

C. *Lifting and Carrying*

To demonstrate correct body alignment for lifting and carrying:

1. Start with a stable base.
2. The body should be in good alignment before beginning your movement. Demonstrate proper body alignment. (Refer to previous checklist.)
3. Grasp the object to be lifted and carried in a balanced position. The rational for lifting the box is to have it near its center of gravity.
4. Set your abdominal and arm muscles for action. Lift a box of books and bring it close to your own line of gravity.
5. Carry the box near the midline of your body for a period of approximately 5 minutes.
6. Shift the box from side to side as required during the period of support. The rationale for shifting the box appropriately is to relieve strain on certain sets of muscles.
7. Place the box on a counter or chair while you rest for short periods of time. The rationale for utilizing the rest period is to prevent fatigue of muscles.
8. Complete the performance by lifting and carrying the box for a period of time not to exceed 5 minutes.

D. *Pushing and Pulling*

To demonstrate correct body alignment in pushing and pulling:

1. Start your action with a stable base of support.
2. Good alignment and balance are necessary for pushing and pulling actions.
3. Position yourself appropriately for the desired action. Observe the principles of body alignment and keep your body erect.

4. Position your feet at least 8 inches apart with one foot slightly advanced.
5. Set your trunk and leg muscles.
6. Lean toward the utility cart in order to push. Lean away from the utility cart in order to pull. Observe the principles of good body alignment.
7. The rationale for leaning your body weight into the load is to make movement easier.
8. Move the utility cart using the large muscles of your leg and thigh.

E. *Pivoting*

To demonstrate the correct body alignment in pivoting:

1. Stand with your feet slightly apart, knees slightly flexed. This allows a stable base of support for use of the leg muscles.
2. Set your trunk and pelvic muscles for action.
3. Set your thigh and leg muscles.
4. Shift your weight to the ball of each foot. This allows you to lift your heel slightly and pivot more easily.
5. Pivot or make a 90° turn on your feet.
6. Move your body simultaneously with your feet so that there is no twisting of your lower back. Your body and feet move together to prevent twisting your back and all parts of the body.
7. Distribute your weight equally on each foot following the turn.

STUDENT SELF-CHECK

Terminology

Match the terms in Column A with the definitions in Column B.

COLUMN A

1. Pivot
2. Diaphragm
3. Fulcrum
4. Friction
5. Contaminate
6. Leverage
7. Lever

COLUMN B

A. Fixed axis or support about which a level turns
B. To turn or rotate
C. Bar or extension used to dislodge something to make work easier
D. Muscular membrane wall used in breathing
E. Resistance to movement by two objects in contact
F. To soil or render unclean
G. Mechanical advantage gained by using a lever

Completion

1. State 5 guidelines to assist you in using body movement.

2. Why would you carry soiled items slightly away from your uniform ?

3. List 3 methods you might use in order to work at a comfortable height.

4. How do you provide *lateral* stability while reaching?

5. List 2 safety precautions to observe if you are pushing or pulling a large object in the corrider.

6. The goal in pushing or pulling an object correctly is to move it with a minimum of _____by using the _____to assist the strong muscles.

CHECK-OUT ACTIVITIES

The statements below explain the activities you must complete in order to finish this module. After you complete the activities, your evaluator will rate your performance using the Evaluator's Final Checklist, SAFE AND EFFECTIVE BODY MOVEMENT.

1. Given an activity at floor level such as putting a slipper on a person's foot, stoop to that level and describe the steps and reasons for each step.

2. Given an object located on a surface at least 12 inches above your head, reach and remove the object. Describe the steps and reasons for each step. You must not hyperextend or strain your back or lose your balance.

3. Given a box weighing 10 to 15 lbs. and located at a height of 32 to 36 inches high, lift and carry the box for 5 minutes. Describe the steps and reasons for each step.

4. Given a utility cart or hospital bed, correctly push and pull the cart. Describe each step and the reason for each step.

5. Given an activity which requires turning, pivot and describe the steps and the reason for each step.

Student _____

Date _____

SAFE AND EFFECTIVE BODY MOVEMENT

Evaluator's Final Checklist

Check the student's performance in the following elements of safe and effective body movement.

Place an X in the appropriate box indicating Not Accomplished, Partially Accomplished, or Fully Accomplished. If, because of special circumstances, the item was impossible to complete, place an X in the Not Applicable box.

Performance Level: All items must receive a rating of FULLY ACCOMPLISHED (or Not Applicable). If any items are rated Not Accomplished or Partially Accomplished, the student and evaluator will discuss this and decide which learning activities must be repeated.

	Student Performance			
	Not Applicable	Not Accomplished	Partially Accomplished	Fully Accomplished
Student performed the following tasks.				
1. Stooped to place slipper on patient's foot.	[ ]	[ ]	[ ]	[ ]
a) Described each step	[ ]	[ ]	[ ]	[ ]
b) Described reason for each step	[ ]	[ ]	[ ]	[ ]
c) Maintained correct body alignment and balance	[ ]	[ ]	[ ]	[ ]
d) Used large muscles of thigh and buttocks to return to upright position	[ ]	[ ]	[ ]	[ ]
2. Reached and removed object from overhead.	[ ]	[ ]	[ ]	[ ]
a) Described each step	[ ]	[ ]	[ ]	[ ]
b) Described reason for each step	[ ]	[ ]	[ ]	[ ]
c) Maintained correct body alignment	[ ]	[ ]	[ ]	[ ]
d) Used smooth coordinated movements to maintain balance	[ ]	[ ]	[ ]	[ ]
e) Reached up from a position directly in front of object to avoid hyperextending or straining back	[ ]	[ ]	[ ]	[ ]
3. Lifted and carried box for 5 minutes.	[ ]	[ ]	[ ]	[ ]
a) Demonstrated proper body alignment	[ ]	[ ]	[ ]	[ ]
b) Described each step	[ ]	[ ]	[ ]	[ ]
c) Described reason for each step	[ ]	[ ]	[ ]	[ ]
d) Grasped box in its center of gravity	[ ]	[ ]	[ ]	[ ]
e) Carried box in balanced position near midline	[ ]	[ ]	[ ]	[ ]
f) Shifted box as required	[ ]	[ ]	[ ]	[ ]
4. Pushed and pulled utility cart or similar object.	[ ]	[ ]	[ ]	[ ]
a) Used correct body alignment	[ ]	[ ]	[ ]	[ ]
b) Described each step	[ ]	[ ]	[ ]	[ ]
c) Described reason for each step	[ ]	[ ]	[ ]	[ ]
d) Used body to assist movement	[ ]	[ ]	[ ]	[ ]

5. Pivoted or made 90° turn on feet.

a) Maintained correct body alignment	[ ]	[ ]	[ ]	[ ]
b) Described each step	[ ]	[ ]	[ ]	[ ]
c) Described reason for each step	[ ]	[ ]	[ ]	[ ]
d) Positioned feet to avoid strain on back or trunk	[ ]	[ ]	[ ]	[ ]

STUDENT SELF-CHECK KEY

Terminology

1. B
2. D
3. A
4. E
5. F
6. G
7. C

Completion

1. A. Maintain proper alignment and balance of body.
   B. Work at a comfortable height.
   C. Keep the work close to your body.
   D. Use smooth, coordinated movements.
   E. "Set" muscles for action.

2. To avoid contaminating your uni orm

3. A. Raise or lower work surface.
   B. Raise or lower yourself.
   C. Use stool or ladder.
   D. Stoop.

4. Spread feet apart to broaden base of support.

5. Answers may vary.

   A. Stay on one side of the hall, usually the right side.
   B. Approach intersections carefully.
   C. Watch carefully when going around corners.
   D. Be careful not to bump anyone in front of you.

6. Effort or strain
   Body weight